

What is claimed is:

1. A dispenser comprising a plurality of arranged micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging said sample solution thereinto, and a discharge port for discharging said sample solution, formed on at least one or more substrates, said micropipette further including a piezoelectric/electrostrictive element disposed on at least one wall surface of said substrate which forms said cavity so that said sample solution is movable in said cavity, and said sample solution being discharged from said discharge port of each of said micropipettes, wherein:

20 a pin, which protrudes upwardly, is provided at said pouring port of each of said micropipettes.

25 2. The dispenser according to claim 1, wherein said pin is provided at a position included in said pouring port as viewed in plan view.

3. The dispenser according to claim 1, wherein said pin is provided at a circumferential edge of said pouring port.

4. The dispenser according to claim 1, wherein said pin is used in order to bore a hole through a solution storage section of a cartridge positioned over said pouring

port so that said solution stored in said solution storage section is introduced into said pouring port.

5. The dispenser according to claim 1, wherein said pin is used in order to bore a hole through a film member coated to close a solution storage section of a cartridge positioned over said pouring port so that said solution stored in said solution storage section is introduced into said pouring port.

6. The dispenser according to claim 1, wherein said pouring port is subjected to a hydrophilic treatment.

7. A dispenser comprising a plurality of arranged micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging said sample solution thereinto, and a discharge port for discharging said sample solution, formed on at least one or more substrates, said micropipette further including a piezoelectric/electrostrictive element disposed on at least one wall surface of said substrate which forms said cavity so that said sample solution is movable in said cavity, and said sample solution being discharged from said discharge port of each of said micropipettes, wherein:

a holding section for holding a pipette for pouring said solution from said pouring port or a tube for receiving said pipette is provided at a circumferential edge of said

pouring port of each of said micropipettes.

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8. The dispenser according to claim 7, wherein at least an inner wall of said tube for receiving said pipette is subjected to a hydrophilic treatment.

9. The dispenser according to claim 7, wherein a scale for measuring an amount of liquid poured into said tube is formed at least at a part of said tube for receiving said pipette.

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10. The dispenser according to claim 7, wherein a portion provided with a projection and a portion provided with no projection are formed at positions of an identical distance from said pouring port on a part of an inner wall of said tube for receiving said pipette.

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11. The dispenser according to claim 7, wherein a filter, which is formed with a large number of openings having an opening area of not more than an opening area of said discharge port, is attached between said pouring port and said tube for receiving said pipette.

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12. The dispenser according to claim 7, wherein said pouring port is subjected to a hydrophilic treatment.

13. A dispenser comprising a plurality of arranged

micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging said sample solution thereinto, and a discharge port for discharging said sample solution, formed on at least one or more substrates, said micropipette further including a piezoelectric/electrostrictive element disposed on at least one wall surface of said substrate which forms said cavity so that said sample solution is movable in said cavity, and said sample solution being discharged from said discharge port of each of said micropipettes, wherein:

said dispenser further comprises a pitch-varying mechanism for varying an arrangement pitch of each of said micropipettes.

14. The dispenser according to claim 13, wherein said pouring port is subjected to a hydrophilic treatment.

15. A method for producing a DNA chip, comprising the steps of using a dispenser comprising a plurality of arranged micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging said sample solution thereinto, and a discharge port for discharging said sample solution, formed on at least one or more substrates, said micropipette further including a piezoelectric/electrostrictive element disposed on at least one wall surface of said substrate which forms said cavity so that said sample solution is

movable in said cavity; and discharging said sample solution onto a base plate from said discharge port of each of said micropipettes to produce said DNA chip, wherein:

5 a cartridge, which has a large number of arranged solution storage sections, is positioned over said dispenser, and a hole is bored through each of said solution storage sections with a pin so that said solution stored in said solution storage section is introduced into said pouring port.

16. The method for producing said DNA chip according to claim 15, wherein said sample solution is supplied onto said base plate in accordance with an ink-jet system.

17. A method for producing a DNA chip, comprising the steps of using a dispenser comprising a plurality of arranged micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging said sample solution thereinto, and a discharge port for discharging said sample solution, formed on at least one or more substrates, said micropipette further including a piezoelectric/electrostrictive element disposed on at least one wall surface of said substrate which forms said cavity so that said sample solution is movable in said cavity; and discharging said sample solution onto a base plate from said discharge port of each of said micropipettes to produce said DNA chip, wherein:

said dispenser to be used is provided with a pin protruding upwardly at said pouring port of each of said micropipettes.

5 18. The method for producing said DNA chip according
to claim 17, wherein:

a cartridge, which is arranged with a large number of solution storage sections, is positioned over said dispenser; and

said cartridge is moved toward said dispenser, and a hole is bored with said pin through each of said solution storage sections so that said solution stored in said solution storage section is introduced into said pouring port.

19. The method for producing said DNA chip according to claim 18, wherein when said solution stored in said solution storage section is introduced into said pouring port, a gas is fed under pressure downwardly to each of said solution storage sections.

20. The method for producing said DNA chip according to claim 17, wherein:

a cartridge, which is arranged with a large number of solution storage sections, is coated with a film member to close said solution storage sections;

said cartridge is positioned over said dispenser so

that said film member is opposed to said dispenser; and
said cartridge is moved toward said dispenser to bore a
hole with said pin through a portion of said film member
corresponding to each of said solution storage sections so
5 that said solution stored in said solution storage section
is introduced into said pouring port.

21. The method for producing said DNA chip according
to claim 17, wherein said sample solution is supplied onto
said base plate in accordance with an ink-jet system.

22. A method for producing a DNA chip, comprising the
steps of using a dispenser comprising a plurality of
arranged micropipettes each including a pouring port for
pouring a sample solution from the outside, a cavity for
pouring and charging said sample solution thereinto, and a
discharge port for discharging said sample solution, formed
on at least one or more substrates, said micropipette
further including a piezoelectric/electrostrictive element
20 disposed on at least one wall surface of said substrate
which forms said cavity so that said sample solution is
movable in said cavity; and discharging said sample solution
onto a base plate from said discharge port of each of said
micropipettes to produce said DNA chip, wherein:
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said dispenser is provided with a pitch-varying
mechanism for varying an arrangement pitch of said
respective micropipettes;

5 said solution is supplied to said dispenser while allowing said arrangement pitch of said respective micropipettes of said dispenser to conform to an arrangement pitch of respective pipettes of a solution supply means for supplying said solution to said dispenser; and

10 said sample solution is supplied from said dispenser onto said base plate while setting said arrangement pitch of said respective micropipettes of said dispenser to be a pitch which is different from said arrangement pitch of said respective pipettes of said solution supply means.

15 23. The method for producing said DNA chip according to claim 22, wherein said sample solution is supplied onto said base plate in accordance with an ink-jet system.

20 24. A method for producing a DNA chip, comprising the steps of using a dispenser comprising a plurality of arranged micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging said sample solution thereinto, and a discharge port for discharging said sample solution, formed on at least one or more substrates, said micropipette further including a piezoelectric/electrostrictive element disposed on at least one wall surface of said substrate which forms said cavity so that said sample solution is movable in said cavity; and discharging said sample solution onto a base plate from said discharge port of each of said

micropipettes to produce said DNA chip, wherein:

5 said dispenser is provided with a holding section for holding a pipette for pouring said solution from said pouring port or a tube for receiving said pipette at a circumferential edge of said pouring port of each of said micropipettes; and

 said solution is supplied to said dispenser while holding said pipette or said tube with said holding section.

10 25. The method for producing said DNA chip according to claim 24, wherein a scale for measuring an amount of liquid poured into said tube is formed at least at a part of said tube for receiving said pipette.

15 26. The method for producing said DNA chip according to claim 24, wherein a portion provided with a projection and a portion provided with no projection are formed at positions of an identical distance from said pouring port on 20 a part of an inner wall of said tube for receiving said pipette.

25 27. The method for producing said DNA chip according to claim 24, wherein a filter, which is formed with a large number of openings having an opening area of not more than an opening area of said discharge port, is attached between said pouring port and said tube for receiving said pipette.

28. The method for producing said DNA chip according to claim 24, wherein said sample solution is supplied onto said base plate in accordance with an ink-jet system.

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29. A method for producing a DNA chip, comprising the steps of using a dispenser comprising a plurality of arranged micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging said sample solution thereinto, and a discharge port for discharging said sample solution, formed on at least one or more substrates, said micropipette further including a piezoelectric/electrostrictive element disposed on at least one wall surface of said substrate which forms said cavity so that said sample solution is movable in said cavity; and discharging said sample solution onto a base plate from said discharge port of each of said micropipettes to produce said DNA chip, wherein:

20 a solution supply means, which is arranged with a large number of pipettes for supplying said solution to said dispenser and which has a pitch-varying mechanism for varying an arrangement pitch of said respective pipettes, is used;

25 said solution is supplied to said solution supply means while allowing said arrangement pitch of said respective pipettes to conform to an arrangement pitch of solution storage sections of a cartridge arranged with a large number

of said solution storage sections; and

said solution is supplied from said solution supply
means to said dispenser while allowing said arrangement
pitch of said respective pipettes to conform to an
arrangement pitch of said respective micropipettes of said
dispenser.

30. The method for producing said DNA chip according to claim 29, wherein said sample solution is supplied onto said base plate in accordance with an ink-jet system.